



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/510,160	10/05/2004	Nicholas J Easton	540-526	6689

23117 7590 05/02/2006

NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER

MULL, FRED H

ART UNIT PAPER NUMBER

3662

DATE MAILED: 05/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/510,160

Applicant(s)

EASTON, NICHOLAS J

Examiner

Fred H. Mull

Art Unit

3662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-14 is/are rejected.
- 7) ☒ Claim(s) 2 and 3 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Appropriate correction is required.

Claim Objections

2. Claim 4 is objected to because of the following informalities:

In line 2, "to" should be changed to --from--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 3662

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 4-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Page in view of Cheston.

In regard to claim 1 and 4-7 Page discloses:

an antenna array having a plurality of antenna elements, the antenna elements being spatially arranged with respect to one another and being operable to receive signals (12, Fig. 9);

signal modulating means comprising a plurality of optical modulators, each of which is associated with a different one of the antenna elements and operable to modulate signals received thereby onto a different respective optical carrier (48, where a different optical signal in each path carries the modulation);

delay means arranged to apply an amount of delay to modulated optical signals passing therethrough in respect of one or more of the antenna elements (10);

demultiplexing means operable to separate the modulated optical carriers within an optical signal output by the delay means (10, where the combining of the signals demultiplexes them);

demodulating means operable to demodulate the signal received by each antenna element from the respective separated modulated optical carrier (34); and

combining means operable to combine the demodulated received signals output by the demodulating means (10/34).

Page fails to disclose the delay means comprising: a plurality of first delay units, each of which is associated with a different one of the antenna elements and is

operable to apply selectively either a first amount of delay or a second amount of delay to the respective modulated optical signal passing therethrough; and a plurality of second delay units, each of which is linked in series to at least one of the first delay units and is operable to apply selectively either a third amount of delay or a fourth amount of delay to modulated optical signals passing therethrough, and wherein at least one of said second delay units is connected in series to at least two of the first delay units.

Cheston discloses a delay means comprising: a plurality of first delay units, each of which is associated with a different one of the antenna elements and is operable to apply selectively either a first amount of delay or a second amount of delay to the respective modulated optical signal passing therethrough; and a plurality of second delay units, each of which is linked in series to at least one of the first delay units and is operable to apply selectively either a third amount of delay or a fourth amount of delay to modulated optical signals passing therethrough, and wherein at least one of said second delay units is connected in series to at least two of the first delay units (Fig. 3; p. 1620, ¶ 1-3, where each time delay can switch between values. The two delay value options are given in the "Time Delay" column of Fig. 3).

The delay means of Page is mechanically complex (Fig. 2; col. 5, line 16 to col. 6, line 45), and thus a failure of any of the mechanical parts or connections could lead to failure of the entire device. The delay means of Cheston is much simpler than that of Page, and thus much less likely to fail. It would have been obvious to replace the delay

means of Page with the delay means taught by Cheston in order to improve the reliability of the communication system of Page.

In regard to claim 8, optoelectric switches are well known switches in antenna arrays with optical processing.

In regard to claims 9-10, Page further discloses the array can be a linear array or a circular array (col. 3, line 60-62)

In regard to claims 11, Page further discloses the array can be a planar array (col. 3, line 49-59; col. 11, lines 10-12.)

4. The examiner also finds the following reference(s) relevant:

Obara (Fig. 7), Newberg (the Figure), Chavez (Fig. 5), and Karasawa (Fig. 2) , which disclose optical processing in receive antenna arrays.

Goutzoulis '009, which discloses a delay unit which can select a first delay or a second delay (Figs. 2, 4)

Applicant is encouraged to consider these documents in formulating their response (if one is required) to this action, in order to expedite prosecution of this application.

Allowable Subject Matter

5. Claim(s) 2-3 is/are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred H. Mull whose telephone number is 571-272-6975. The examiner can normally be reached on Monday through Friday from approximately 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H. Tarcza can be reached on 571-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fred H. Mull
Examiner
Art Unit 3662

fhm


THOMAS H. TARCZA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600